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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,049	06/15/2001	Itzhak Sapir	Sapir- 01	1292

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EXAMINER	
HERNANDEZ, NELSON D	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/883,049	SAPIR, ITZHAK	
	Examiner	Art Unit	
	Nelson D. Hernandez	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: the phrase "(determined by the shutter rectangular opening in the case of a 35 mm camera)" in lines 9 and10. The structure, which goes to make up the device, must be clearly and positively specified. Appropriate correction is required. For examining purposes, the examiner will read the phrase without the parenthesis.

2. Claim 3 is objected to because of the following informalities: the phrase "were the traces extend", should be written as "wherein traces extend". Appropriate correction is required.

3. Claim 4 is objected to because of the following informalities: the phrase "in the said", should be written as "in said". Appropriate correction is required.

4. Claims 7 were numbered twice. The claims 7-11 must be properly renumbered as claims 8-12 on amendment

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

6. Claim 5 is rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure, which goes to make up the device, must be clearly and positively specified. The structure must be organized and correlated in such a

manner as to present a complete operative device. The claim(s) must be in one sentence form only. Note the format of the claims in the patent(s) cited.

For examining purposes, claim 5 will be read as best understood.

7. Claim 5 recites the limitation "It also allows for thicker dies as in claim 4" in page 16, lines 3-4. There is insufficient antecedent basis for this limitation in the claim. Which element in the claim "allows for thicker dies as in claim 4"?

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 11 rejected under 35 U.S.C. 102(e) as being anticipated by Glenn, US Patent 6,492,699 B1.

Regarding claim **11**, Glenn teaches a window frame (Fig. 10: 110 shows the transparent window) for receiving an integrated circuit die comprised of: a frame (Fig. 10: 18) with a top surface and an bottom surface, said top surface having an integral inwardly depending lip (See fig. 10: 1018 bonded to the substrate 1002 and to the imager die 102) about its interior perimeter, said bottom surface including an interconnect channel about its interior perimeter (See fig 10. bottom surface including

interconnect channel 1004) (Col. 5, line 67 – col. 6, line 9; col. 6, lines 57-61; col. 15, line 65 – col. 16, line 41; col. 16, line 66 – col. 17, line 15).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Glenn, US Patent 6,492,699 B1 in view of DeLeeuw, US Patent 6,351,282 B1.

Regarding claim **1**, Glenn discloses an integrated circuit package (Fig. 10: 100) for housing an integrated imaging die (Fig. 10: 102), said package providing a reference plane in relation to an image plane of said die (See fig. 10), said package comprising: a transparent window (Fig. 10: 110), a window standoff (Fig. 10: 108) with an internal plane acting as said reference image plane (Fig. 10: 120) and an external plane acting as reference positioning plane for said package when interfacing with an external optical device, a substrate (Fig. 10: 1002) on which the said imager die is mounted, said package is designed to accommodate an imager die that is bigger than said window (See fig. 10) and providing an interconnection area (See fig. 10, elements 106 and 1004) between said die and the package that is outside the imaging area (Col. 5, line 67 – col. 6, line 9; col. 6, lines 57-61; col. 15, line 65 – col. 16, line 41; col. 16, line 66 – col. 17, line 15). Glenn does not explicitly discloses that the active imaging area of the

imager die is as big as the external device allows determined by the shutter rectangular opening in the case of a 35 mm camera.

However, DeLeeuw teaches an apparatus (Fig. 2) for electronic photography comprising an imaging die (Figs. 2: 35 and 8: 206) wherein said imaging die is as big as the external device allows determined by the shutter rectangular opening in the case of a 35 mm camera (See figs. 1 and 9) (Col. 2, lines 33-56; col. 3, lines 31-49; col. 3, line 66 – col. 4, line 6; col. 5, line 59 – col. 6, line 3; col. 6, lines 42-54).

Therefore, taking the combined teaching of Glenn in view of DeLeeuw as a whole, it would have been obvious to on e of ordinary skill in the art at the time the invention was made to modify the integrated circuit package in Glenn by having the imaging die is as big as the external device allows determined by the shutter rectangular opening in the case of a 35 mm camera. The motivation to do so would help the imaging die in Glenn to capture electronic images in a 35 mm camera as suggested by DeLeeuw (Col. 2, lines 33-56).

Regarding claim **2**, Glenn teaches that the substrate (Fig. 10: 1002) designed as a single or multi-layer electrically conductive circuitry and having said imager die electrically connected to it (Col. 16, lines 34-51).

Regarding claim **3**, Glenn teaches an area wherein traces (See fig. 10) extend beyond the window standoff dimensions to form a group of pads (Fig. 10: 106) for connecting (Fig. 10: 1006) the imager to external circuitry (Col. 16, lines 7-22).

Regarding claim **4**, the combination of Glenn in view of DeLeeuw teaches additional dies (See DeLeeuw, fig 8, JPEG compression 202 and image processing chip

203) that are mounted on the said substrate in said interconnection area to form a MCM (Multi Chip Module) device (Col. 5, line 59 – col. 6, line 3).

Regarding claim **5**, the combination of Glenn in view of DeLeeuw teaches thicker interconnection area (Fig. 7: 204) than the rest of the package (Fig. 7: 206), said thicker area allows for electrical interconnection methods that require some height above the image plane of the die such as wire bonding (In fig. 8, DeLeeuw teaches connections to JPEG compression 202 and image processing chip 203 require some height above the image plane of the die) (Col. 7, line 59 – col. 8, line 29).

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Sapir, US Patent 5,452,000 in view of DeLeeuw, US Patent 6,351,282 B1.

Regarding claim **6**, Sapir discloses an integrated circuit package housing an conventional SLR camera (Figs. 1 and 6) comprising: electronic imager die (Fig. 2: 90) for use in a substrate (Figs. 1: 16 and 5: 16) adapted so as to be received upon the film rail of said camera, said substrate including an electronic imager (Fig. 2: 90) with an active surface, said active surface substantially equal to the focal image plane of said camera (Col. 2, lines 53-66; col. 4, lines 6-12). Containing at least one layer of electrically conductive circuitry and means for electrically connecting said electronic imager to said conductive circuitry outside of said focal image plane are necessitated in Sapir to connect the imager die (Fig. 5: 90) to surface mounted electronics 91 and 92 in fig. 5 (Col. 4, lines 6-12). Sapir fails to teach the electronic imager with an interconnection area.

However, Glenn teaches an integrated circuit package (Fig. 10: 100) for housing an integrated imaging die (Fig. 10: 102) wherein the imaging die provides an interconnection area (See fig. 10, elements 106 and 1004) between said die and the package that is outside the imaging area (Col. 5, line 67 – col. 6, line 9; col. 6, lines 57-61; col. 15, line 65 – col. 16, line 41; col. 16, line 66 – col. 17, line 15).

Therefore, taking the combined teaching of Sapir in view of Glenn as a whole, it would have been obvious to one of ordinary skill in the art to modify the imaging die in Sapir by having an interconnection area between said die and the package that is outside the imaging area. The motivation to do so would help to protect the active area for the non-critical areas by encapsulating the active area so as to avoid destruction or damage to the sensor as suggested by Glenn (Col. 3, lines 8-18).

13. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sapir, US Patent 5,452,000 in view of Glenn, US Patent 6,492,699 B1 and further in view of Cronin, US Patent 5,561,458.

Regarding claim **7**, Sapir discloses an integrated circuit package (Figs. 1 and 6) for housing an electronic imager die for use in a conventional camera comprising: a substrate (Figs. 1: 16 and 5: 16), said substrate adapted so as to be received upon a film rail; an electronic imager die (Fig. 5: 90) having an active surface substantially equal to the focal image plane of said camera. Containing at least one layer of electrically conductive circuitry are necessitated in Sapir to connect the imager die (Fig. 5: 90) to surface mounted electronics 91 and 92 in fig. 5 (Col. 2, lines 53-66; col. 4, lines 6-12). Sapir does not explicitly disclose that the substrate has a first projection and a

second projection, that the imager die includes an interconnect area and an inactive side, said inactive side bonded to said substrate, said interconnect area electrically connected at least one location to said conductive circuitry and a frame adapted so as to be received within the shutter curtain aperture of said camera and within the film rail volume of said camera and bonded to said substrate, said frame having an inwardly depending lip and including an interconnect channel, wherein said interconnect area is received by said lip and protrudes into said interconnect channel, a transparent window mounted on said frame and overlying said electronic imager die.

However, Glenn teaches an integrated circuit package (Fig. 10: 100) for housing an integrated imaging die (Fig. 10: 102), said package providing a reference plane in relation to an image plane of said die (See fig. 10), said package comprising: a transparent window (Fig. 10: 110) overlying said electronic imager die, a substrate (Fig. 10: 1002) substrate having a first projection and a second projection (See substrate 1002 having two projections for the interconnection area 106 in fig. 10) on which the said imager die is mounted, said package is designed to accommodate an imager die that is bigger than said window (See fig. 10) and providing an interconnection area (See fig. 10, elements 106 and 1004) between said die and the package that is outside the imaging area. Glenn also teaches a frame (Fig. 10: 1018) bonded to the substrate, said frame having an inwardly lip (See fig. 10: 1018 bonded to the substrate 1002 and to the imager die 102) and including and interconnect channel (See fig. 10, items 1004, 1008 and 1010 connected to bonding pad 106), wherein said interconnect area is received by

said lip and protrudes into said interconnect channel (Col. 5, line 67 – col. 6, line 9; col. 6, lines 57-61; col. 15, line 65 – col. 16, line 41; col. 16, line 66 – col. 17, line 15).

Therefore taking the combined teaching of Sapir in view of Glenn as a whole, it would have been obvious to on of ordinary skill in the art at the time the invention was made to modify Sapir by having an imager die including an interconnect area and an inactive side, said inactive side bonded to said substrate, said interconnect area electrically connected at least one location to said conductive circuitry and a frame having an inwardly depending lip and including an interconnect channel, wherein said interconnect area is received by said lip and protrudes into said interconnect channel, a transparent window mounted on said frame and overlying said electronic imager die. The motivation to do so would help to protect the active area for the non-critical areas by encapsulating the active area so as to avoid destruction or damage to the sensor and other elements as suggested by Glenn (Col. 3, lines 8-18).

The combination of Sapir in view of Glenn does not teach a frame adapted so as to be received within the shutter curtain aperture of said camera and within the film rail volume of said camera and bonded to said substrate.

However, Cronin teaches an electronic imaging module (See fig. 2B) having a frame (Projecting housing in fig. 2B: 62) adapted so as to be received within the shutter curtain aperture (Fig. 2A: 13) of a film camera and within the film rail volume (See fig. 2A) of said camera and bonded to said substrate (Col. 4, lines 32-58; col. 8, lines 50-62).

Therefore, taking the combined teaching of Sapir in view of Glenn and further in view of Cronin as a whole, it would have been obvious to one of ordinary skill in the art to modify the integrated circuit package by having a frame adapted so as to be received within the shutter curtain aperture of said camera and within the film rail volume of said camera and bonded to said substrate. The motivation to do so would help the integrated circuit package to be adapted to a film camera converting it into a digital camera as suggested by Cronin (Col. 2, lines 30-35).

Regarding claim **8**, the combination of Sapir in view of Glenn and further in view of Cronin teaches the same as in claim 7. Therefore grounds for rejecting claim 7 apply here.

Regarding claim **9**, the combination of Sapir in view of Glenn and further in view of Cronin teaches the same as in claim 7. Therefore grounds for rejecting claim 7 apply here.

Regarding claim **10**, the combination of Sapir in view of Glenn and further in view of Cronin teaches that the window includes a chamfer (Fig. 2B shows a chamfer around transparent window 64) about its perimeter. Grounds for rejecting claim 7 apply here.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn, US Patent 6,492,699 B1 and in view of Cronin, US Patent 5,561,458.

Regarding claim **12**, Glenn does not explicitly disclose that the frame is adapted so as to be received by the shutter curtain aperture of a camera.

However, Cronin teaches an electronic imaging module (See fig. 2B) having a frame (Projecting housing in fig. 2B: 62) adapted so as to be received within the shutter

curtain aperture (Fig. 2A: 13) of a film camera and within the film rail volume (See fig. 2A) of said camera and bonded to said substrate (Col. 4, lines 32-58; col. 8, lines 50-62).

Therefore, taking the combined teaching of Glenn in view of Cronin as a whole, it would have been obvious to one of ordinary skill in the art to modify the integrated circuit package by having a frame adapted so as to be received within the shutter curtain aperture of said camera and within the film rail volume of said camera and bonded to said substrate. The motivation to do so would help the integrated circuit package to be adapted to a film camera converting it into a digital camera as suggested by Cronin (Col. 2, lines 30-35).

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (703) 305-8717. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez
Examiner
Art Unit 2612

NDHH
October 1, 2004

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